

1/15

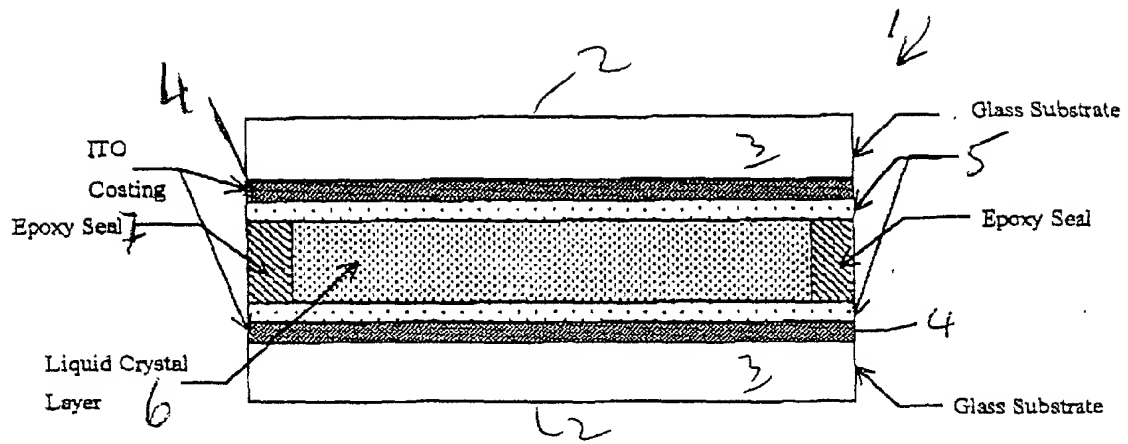


Fig. 1 Structure of passively driven liquid crystal display

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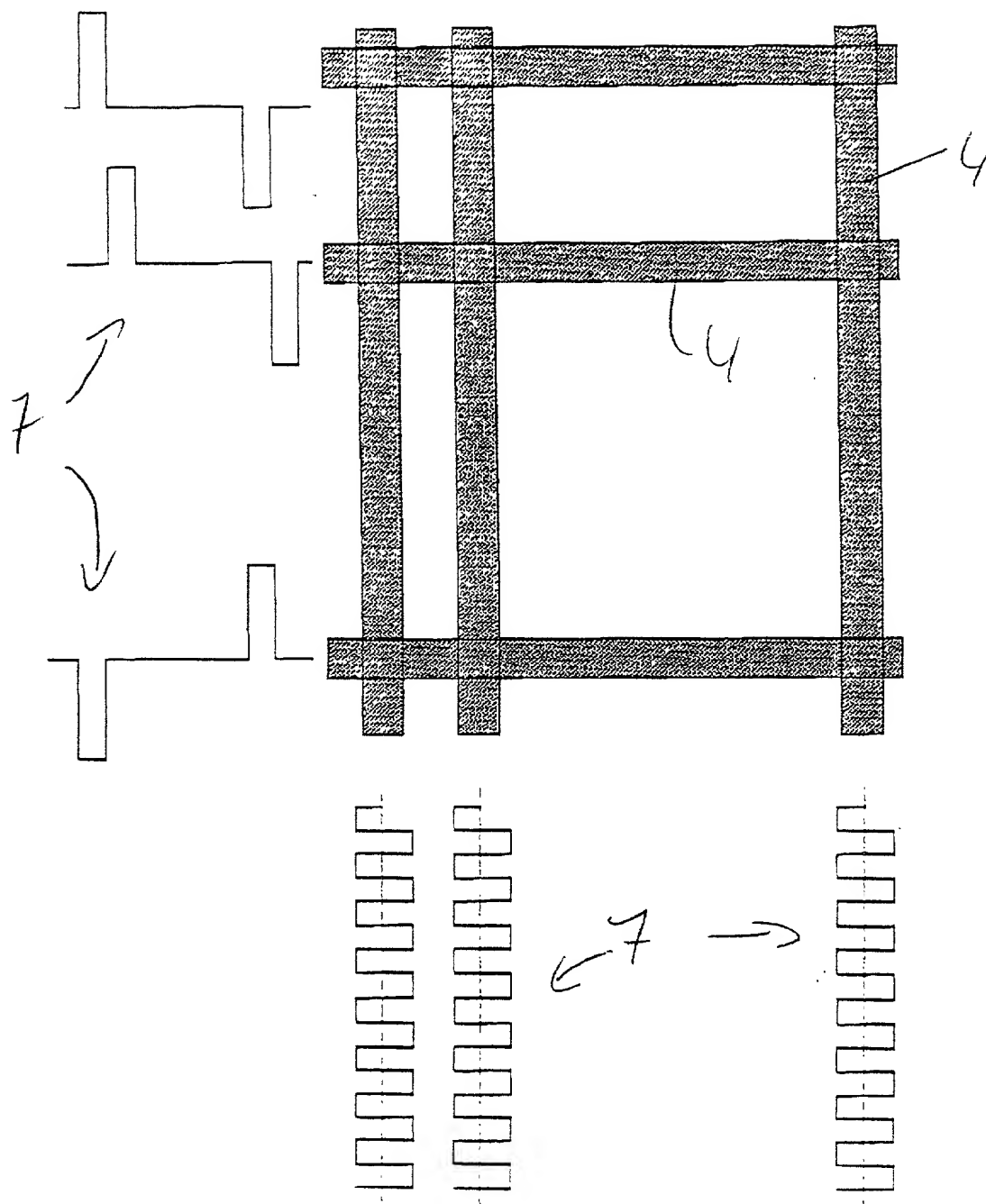
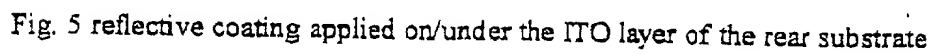
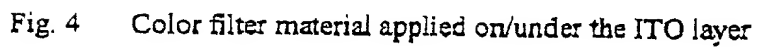
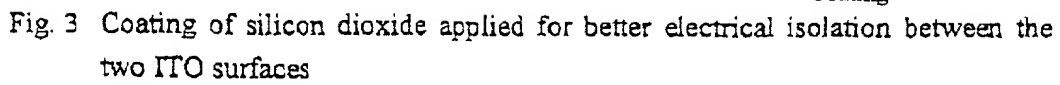


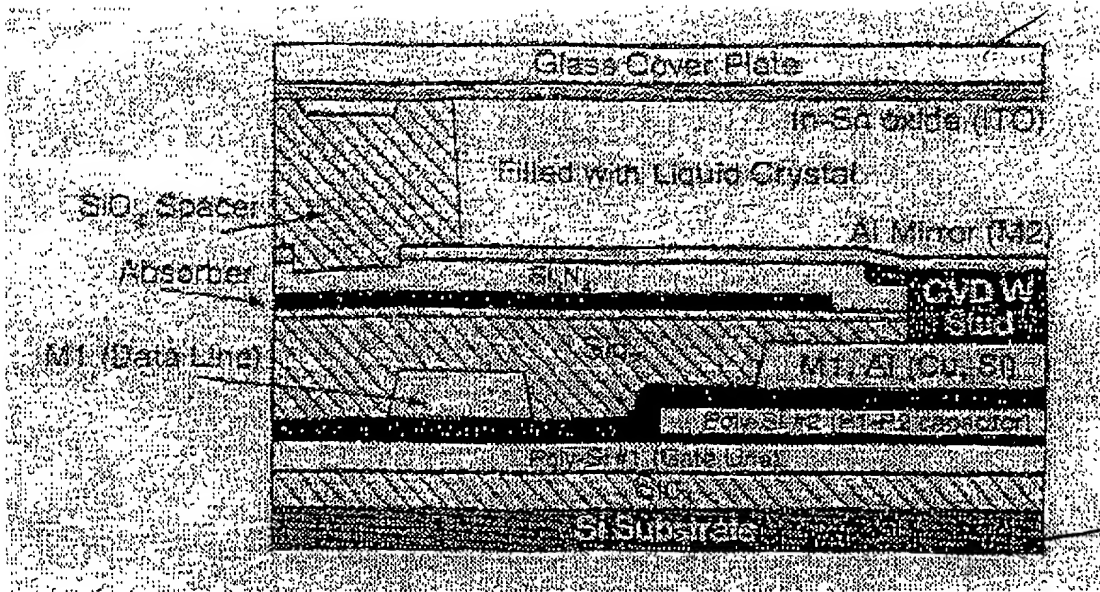
Fig. 2 Example waveform applied to the common and segment electrodes

Year	Total population		Urban population		Rural population		Total population		Urban population		Rural population	
	Population	Density	Population	Density	Population	Density	Population	Density	Population	Density	Population	Density
1950	10,000,000	100	5,000,000	500	5,000,000	50	10,000,000	100	5,000,000	500	5,000,000	50
1955	11,000,000	110	5,500,000	550	5,500,000	55	11,000,000	110	5,500,000	550	5,500,000	55
1960	12,000,000	120	6,000,000	600	6,000,000	60	12,000,000	120	6,000,000	600	6,000,000	60
1965	13,000,000	130	6,500,000	650	6,500,000	65	13,000,000	130	6,500,000	650	6,500,000	65
1970	14,000,000	140	7,000,000	700	7,000,000	70	14,000,000	140	7,000,000	700	7,000,000	70
1975	15,000,000	150	7,500,000	750	7,500,000	75	15,000,000	150	7,500,000	750	7,500,000	75
1980	16,000,000	160	8,000,000	800	8,000,000	80	16,000,000	160	8,000,000	800	8,000,000	80
1985	17,000,000	170	8,500,000	850	8,500,000	85	17,000,000	170	8,500,000	850	8,500,000	85
1990	18,000,000	180	9,000,000	900	9,000,000	90	18,000,000	180	9,000,000	900	9,000,000	90
1995	19,000,000	190	9,500,000	950	9,500,000	95	19,000,000	190	9,500,000	950	9,500,000	95
2000	20,000,000	200	10,000,000	1,000	10,000,000	100	20,000,000	200	10,000,000	1,000	10,000,000	100
2005	21,000,000	210	10,500,000	1,050	10,500,000	105	21,000,000	210	10,500,000	1,050	10,500,000	105
2010	22,000,000	220	11,000,000	1,100	11,000,000	110	22,000,000	220	11,000,000	1,100	11,000,000	110
2015	23,000,000	230	11,500,000	1,150	11,500,000	115	23,000,000	230	11,500,000	1,150	11,500,000	115
2020	24,000,000	240	12,000,000	1,200	12,000,000	120	24,000,000	240	12,000,000	1,200	12,000,000	120
2025	25,000,000	250	12,500,000	1,250	12,500,000	125	25,000,000	250	12,500,000	1,250	12,500,000	125
2030	26,000,000	260	13,000,000	1,300	13,000,000	130	26,000,000	260	13,000,000	1,300	13,000,000	130
2035	27,000,000	270	13,500,000	1,350	13,500,000	135	27,000,000	270	13,500,000	1,350	13,500,000	135
2040	28,000,000	280	14,000,000	1,400	14,000,000	140	28,000,000	280	14,000,000	1,400	14,000,000	140
2045	29,000,000	290	14,500,000	1,450	14,500,000	145	29,000,000	290	14,500,000	1,450	14,500,000	145
2050	30,000,000	300	15,000,000	1,500	15,000,000	150	30,000,000	300	15,000,000	1,500	15,000,000	150
2055	31,000,000	310	15,500,000	1,550	15,500,000	155	31,000,000	310	15,500,000	1,550	15,500,000	155
2060	32,000,000	320	16,000,000	1,600	16,000,000	160	32,000,000	320	16,000,000	1,600	16,000,000	160
2065	33,000,000	330	16,500,000	1,650	16,5							



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Fig. 6 Arrangement for reflective single crystal CMOS microdisplay

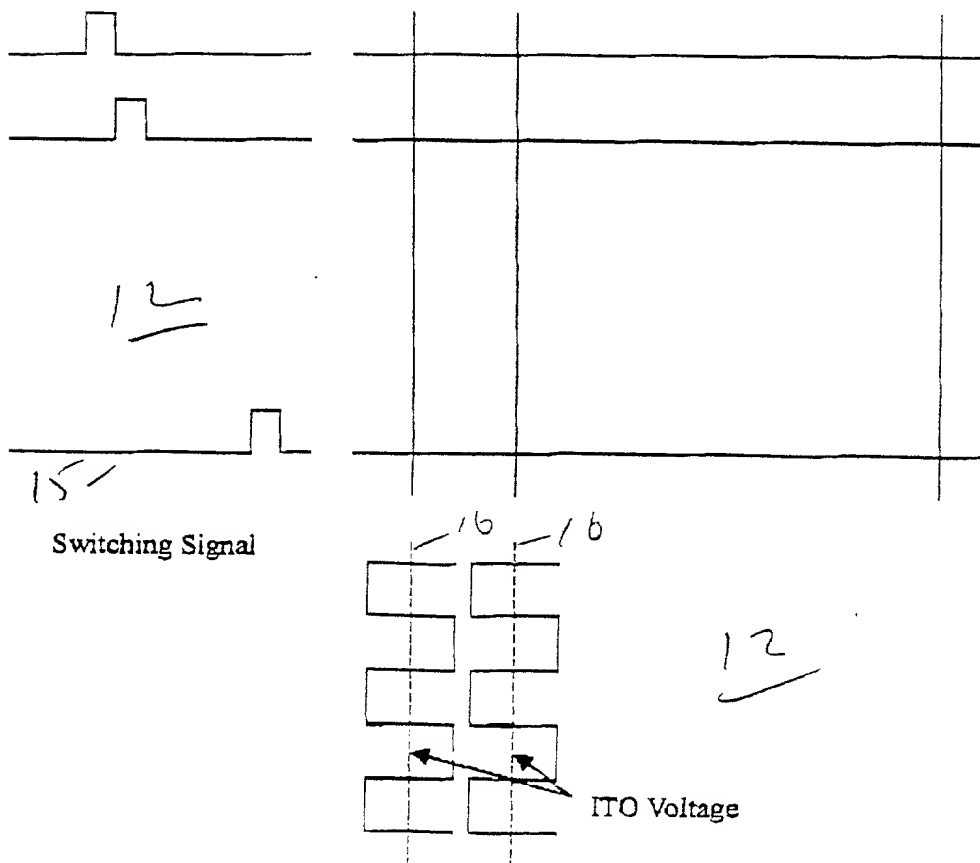
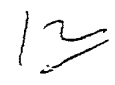


Fig. 7 Signal waveform incorporating row inversion scheme for actively driven liquid crystal display

00021307 022004

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2
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Fig. 9 Signal waveform incorporating pixel inversion scheme for actively driven liquid crystal display

Table 1		Table 2		Table 3		Table 4		Table 5		Table 6		Table 7		Table 8		Table 9		Table 10		Table 11		Table 12		Table 13		Table 14		Table 15		Table 16		Table 17		Table 18		Table 19		Table 20		Table 21		Table 22		Table 23		Table 24		Table 25		Table 26		Table 27		Table 28		Table 29		Table 30		Table 31		Table 32		Table 33		Table 34		Table 35		Table 36		Table 37		Table 38		Table 39		Table 40		Table 41		Table 42		Table 43		Table 44		Table 45		Table 46		Table 47		Table 48		Table 49		Table 50		Table 51		Table 52		Table 53		Table 54		Table 55		Table 56		Table 57		Table 58		Table 59		Table 60		Table 61		Table 62		Table 63		Table 64		Table 65		Table 66		Table 67		Table 68		Table 69		Table 70		Table 71		Table 72		Table 73		Table 74		Table 75		Table 76		Table 77		Table 78		Table 79		Table 80		Table 81		Table 82		Table 83		Table 84		Table 85		Table 86		Table 87		Table 88		Table 89		Table 90		Table 91		Table 92		Table 93		Table 94		Table 95		Table 96		Table 97		Table 98		Table 99		Table 100		Table 101		Table 102		Table 103		Table 104		Table 105		Table 106		Table 107		Table 108		Table 109		Table 110		Table 111		Table 112		Table 113		Table 114		Table 115		Table 116		Table 117		Table 118		Table 119		Table 120		Table 121		Table 122		Table 123		Table 124		Table 125		Table 126		Table 127		Table 128		Table 129		Table 130		Table 131		Table 132		Table 133		Table 134		Table 135		Table 136		Table 137		Table 138		Table 139		Table 140		Table 141		Table 142		Table 143		Table 144		Table 145		Table 146		Table 147		Table 148		Table 149		Table 150		Table 151		Table 152		Table 153		Table 154		Table 155		Table 156		Table 157		Table 158		Table 159		Table 160		Table 161		Table 162		Table 163		Table 164		Table 165		Table 166		Table 167		Table 168		Table 169		Table 170		Table 171		Table 172		Table 173		Table 174		Table 175		Table 176		Table 177		Table 178		Table 179		Table 180		Table 181		Table 182		Table 183		Table 184		Table 185		Table 186		Table 187		Table 188		Table 189		Table 190		Table 191		Table 192		Table 193		Table 194		Table 195		Table 196		Table 197		Table 198		Table 199		Table 200		Table 201		Table 202		Table 203		Table 204		Table 205		Table 206		Table 207		Table 208		Table 209		Table 210		Table 211		Table 212		Table 213		Table 214		Table 215		Table 216		Table 217		Table 218		Table 219		Table 220		Table 221		Table 222		Table 223		Table 224		Table 225		Table 226		Table 227		Table 228		Table 229		Table 230		Table 231		Table 232		Table 233		Table 234		Table 235		Table 236		Table 237		Table 238		Table 239		Table 240		Table 241		Table 242		Table 243		Table 244		Table 245		Table 246		Table 247		Table 248		Table 249		Table 250		Table 251		Table 252		Table 253		Table 254		Table 255		Table 256		Table 257		Table 258		Table 259		Table 260		Table 261		Table 262		Table 263		Table 264		Table 265		Table 266		Table 267		Table 268		Table 269		Table 270		Table 271		Table 272		Table 273		Table 274		Table 275		Table 276		Table 277		Table 278		Table 279		Table 280		Table 281		Table 282		Table 283		Table 284		Table 285		Table 286		Table 287		Table 288		Table 289		Table 290		Table 291		Table 292		Table 293		Table 294		Table 295		Table 296		Table 297		Table 298		Table 299		Table	
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-	+	-	+	-	+
+	-	+	-	+	-
-	+	-	+	-	+
+	-	+	-	+	-
-	+	-	+	-	+

Frame N

19

-	+	-	+	-	+
+	-	+	-	+	-
-	+	-	+	-	+
+	-	+	-	+	-
-	+	-	+	-	+
+	-	+	-	+	-

Frame N+1

19

Fig. 12 Polarities of resulting fields applied to pixels for two consecutive frames adopting pixel inversion scheme

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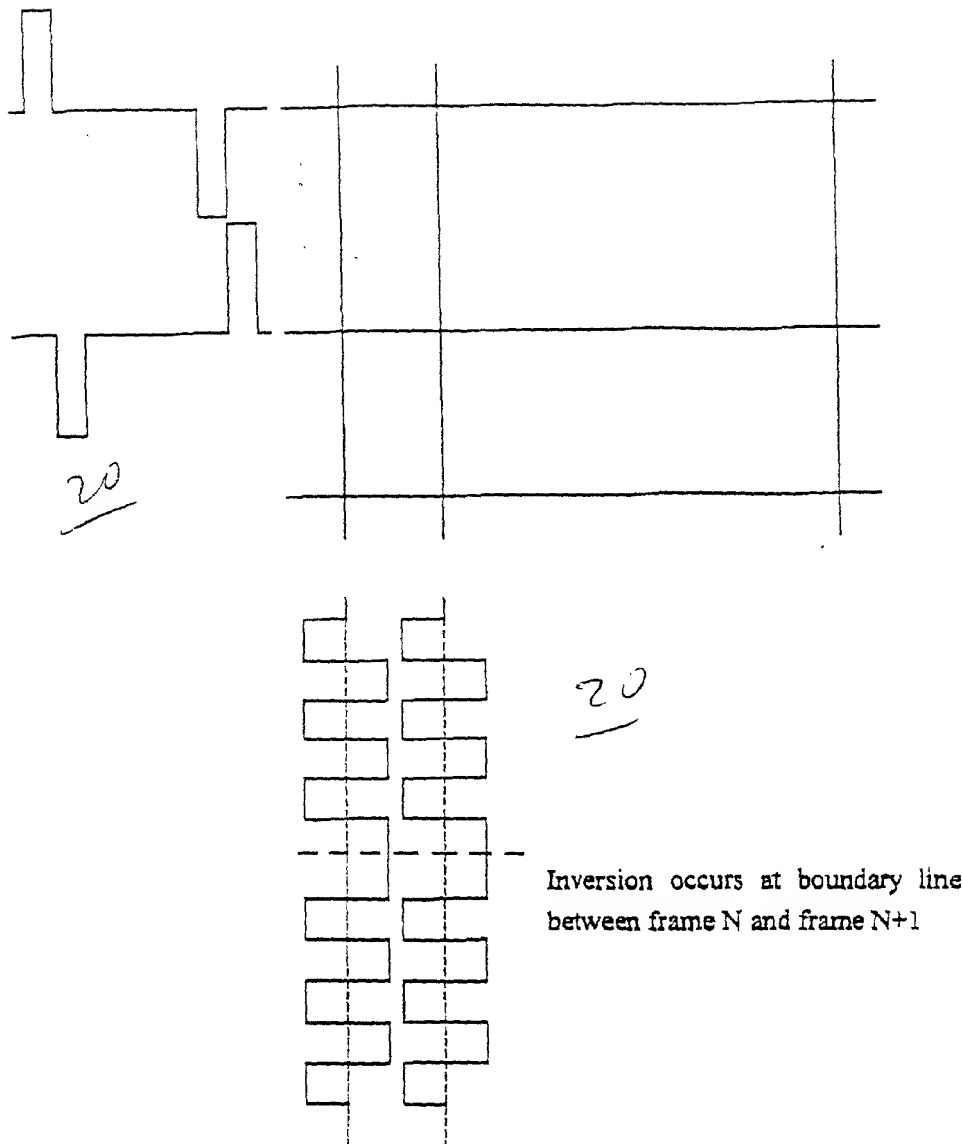
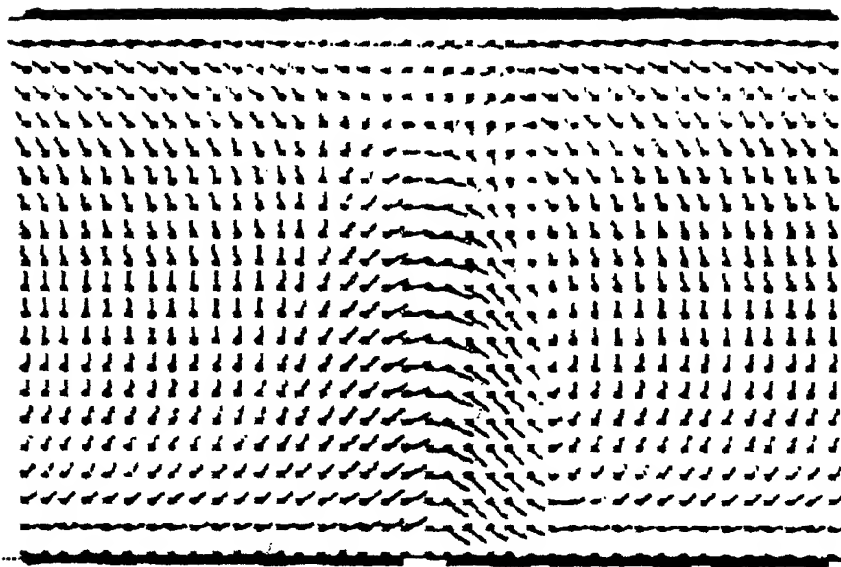


Fig. 13 Signal waveform incorporating row inversion scheme for passively driven liquid crystal display

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Fig. 14 2D director configuration of two pixels driven in column inversion mode

10220 202200

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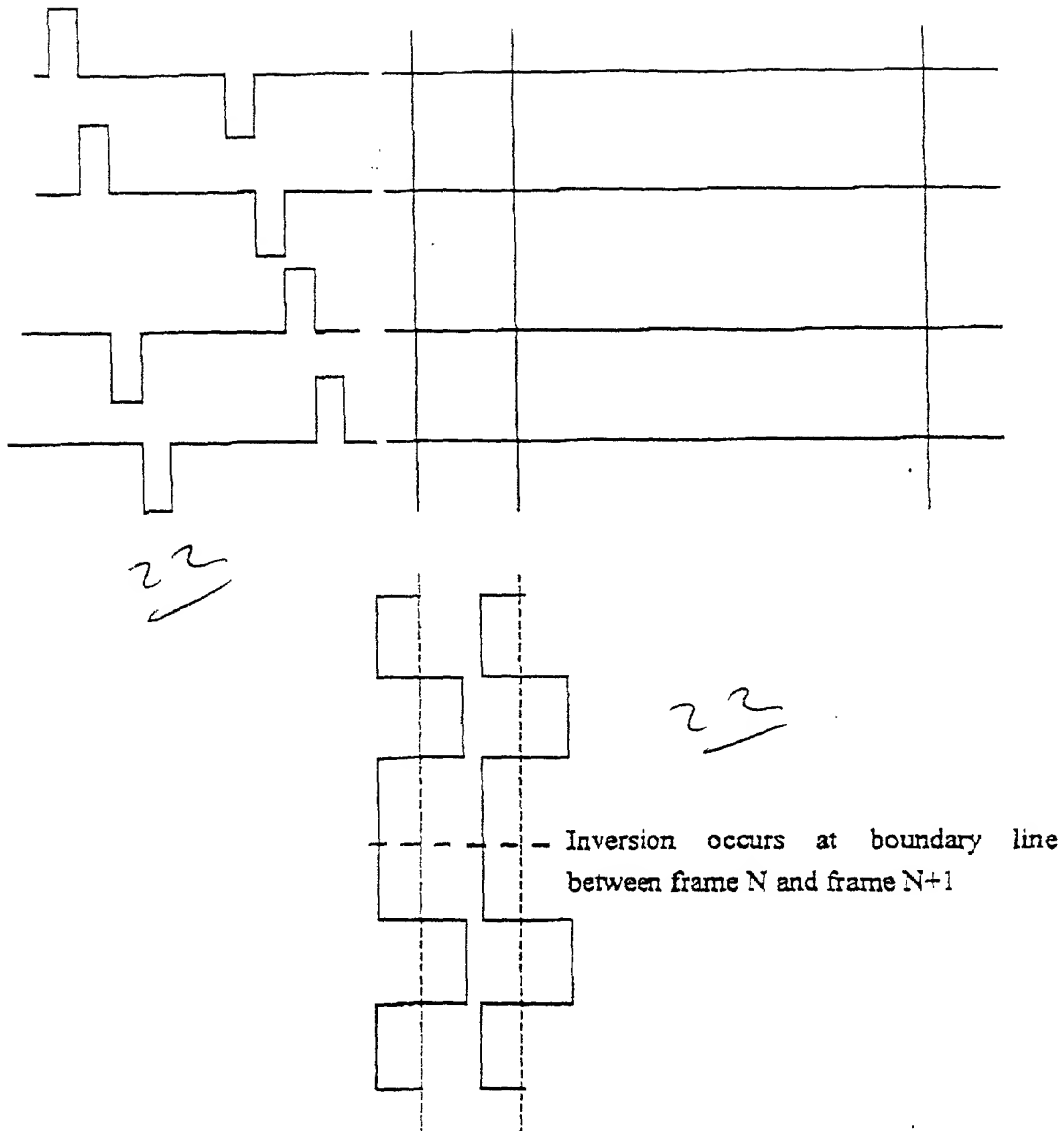


Fig. 15 Signal waveform incorporating 2-row inversion scheme for passively driven liquid crystal display

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+	+	+	+	+	+
+	+	+	+	+	+
-	-	-	-	-	-
-	-	-	-	-	-
+	+	+	+	+	+
+	+	+	+	+	+

Frame N

23

-	-	-	-	-	-
-	-	-	-	-	-
+	+	+	+	+	+
+	+	+	+	+	+
-	-	-	-	-	-
-	-	-	-	-	-

Frame N+1

23

Fig. 16 Polarities of resulting fields applied to pixels for two consecutive frames adopting 2-row inversion scheme

+	+	-	-	+	+
+	+	-	-	+	+
+	+	-	-	+	+
+	+	-	-	+	+
+	+	-	-	+	+
+	+	-	-	+	+

Frame N

24

-	-	+	+	-	-
-	-	+	+	-	-
-	-	+	+	-	-
-	-	+	+	-	-
-	-	+	+	-	-
-	-	+	+	-	-

Frame N+1

24

Fig. 17 Polarities of resulting fields applied to pixels for two consecutive frames adopting 2-column inversion scheme

12/15

+	+	-	-	+	+
+	+	-	-	+	+
-	-	+	+	-	-
-	-	+	+	-	-
+	+	-	-	+	+
+	+	-	-	+	+

Frame N

25

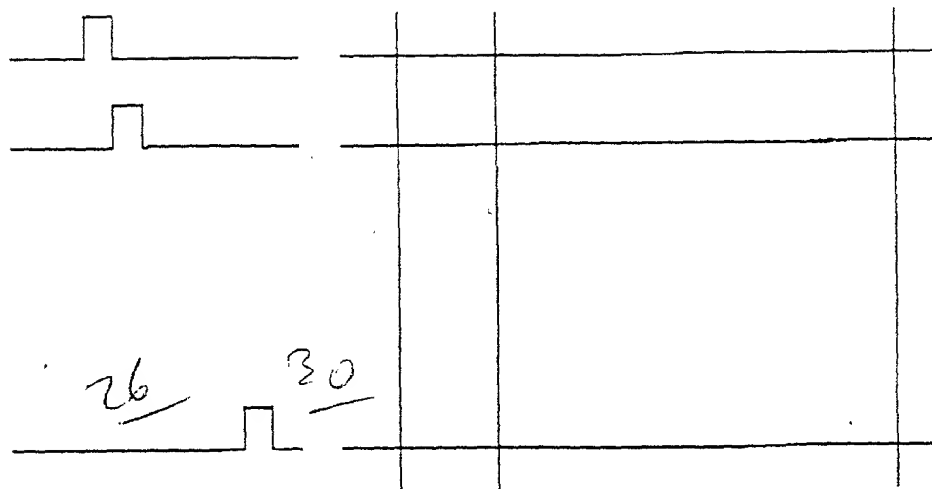
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-	-	+	+	-	-
+	+	-	-	+	+
+	+	-	-	+	+
-	-	+	+	-	-
-	-	+	+	-	-

Frame N+1

25

Fig. 18 Polarities of resulting fields applied to pixels for two consecutive frames adopting 2x2-pixel inversion scheme

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Switching Signal

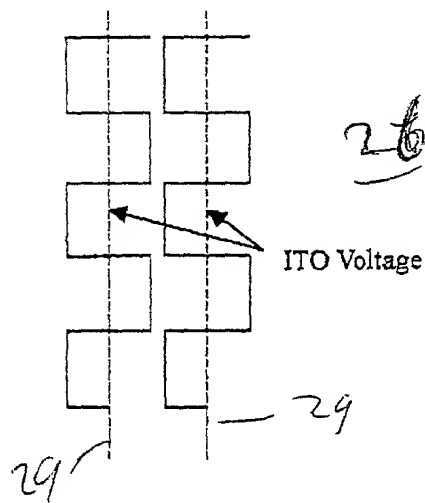


Fig. 19 Signal waveform incorporating 2-row inversion scheme for actively driven liquid crystal display

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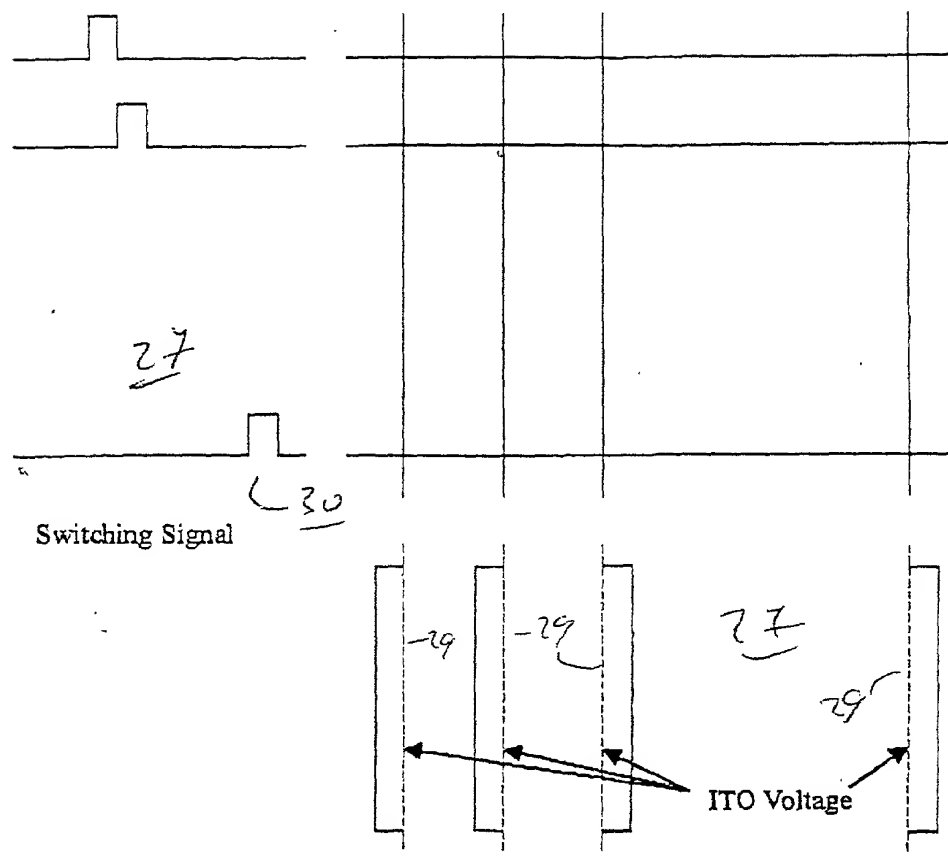


Fig. 20 Signal waveform incorporating 2-column inversion scheme for actively driven liquid crystal display

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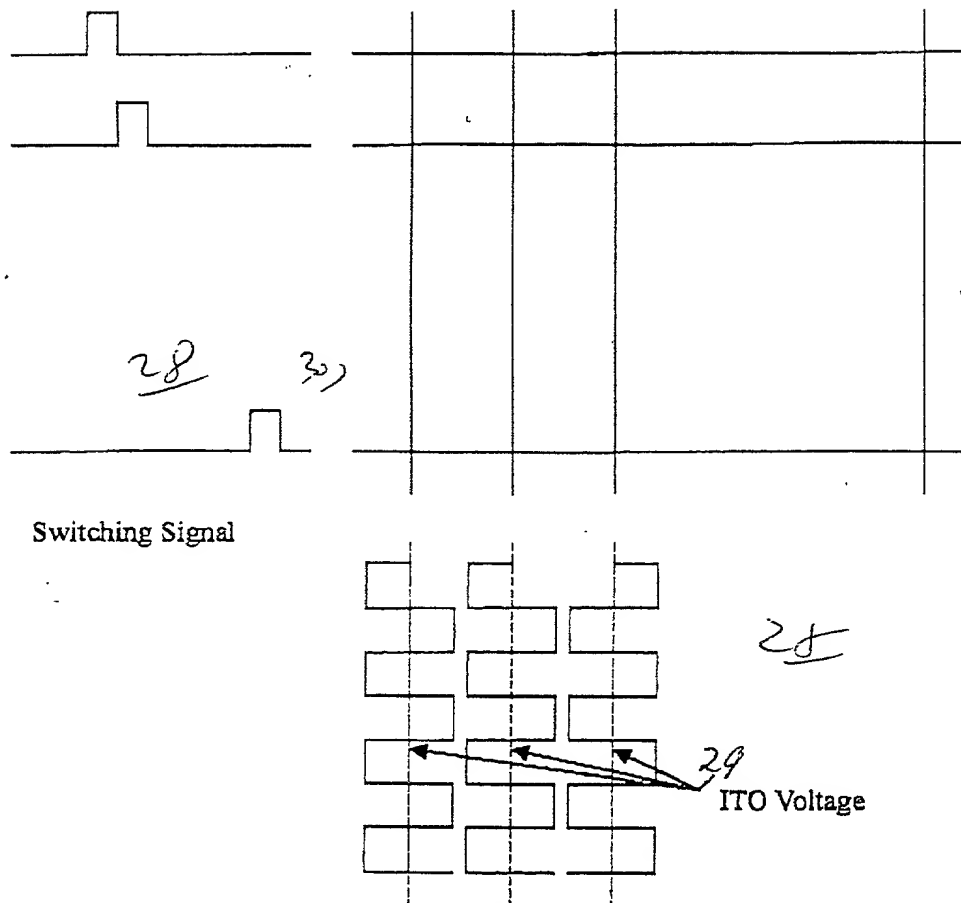


Fig. 21 Signal waveform incorporating 2x2-pixel inversion scheme for actively driven liquid crystal display